IN THE U.S. PATENT AND TRADEMARK OFFICE

Appellant:	Sunil K. GUPTA
Application No.:	10/027,580
Art Unit:	2626
Conf. No.:	1242
Filed:	December 21, 2001
Examiner:	H. Vo
For:	METHOD AND SYSTEM FOR UPDATING AND CUSTOMIZING RECOGNITION VOCABULARY
Atty. Dkt. No.:	29250-000550/US

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APPELLANT'S BRIEF ON APPEAL UNDER 37 C.F.R. §41.37

Sir:

This is an Appeal Brief in response to the Pre-Appeal Brief Review mailed December 7, 2007, of Claims 8-11, 13 and 14. It should be noted that the Pre-Appeal Brief Review *erroneously indicated* that claims 1, 2, 7-11, 13, 14 and 22-24 were being reviewed. A Notice of Appeal from this Final Rejection was timely filed on August 16, 2007. Concurrently, but separately filed, is a transmittal letter that encloses a Petition for an Extension of Time for one (1) month, with the requisite governmental fee. Appellant submits herewith their Brief on Appeal as required by 37 C.F.R. §41.37 along with the appropriate governmental fees as required by 37 C.F.R. §41.20(b)(2).

BRIEF ON BEHALF OF APPELLANT

Appellant hereby provides the following remarks in support of the Notice of Appeal filed on August 16, 2007, appealing the Examiner's final rejection of claims 8-11, 13 and 14 of the present application in the Office Action mailed on May 16, 2007. A listing of the appealed claims 8-11, 13 and 14 is provided in the *Claims Appendix.*

I.   REAL PARTY IN INTEREST:

The real party in interest is Alcatel-Lucent.

II.   RELATED APPEALS AND INTERFERENCES:

There are no pending Appeals related to this application.

III.   STATUS OF CLAIMS:

Claims 8-11, 13 and 14 are pending in this application, with claim 8 being in independent form. Claims 1-7, 12 and 15-24 have previously been cancelled. Each of claims 8-11, 13 and 14 remain finally rejected and are being appealed.

It should be noted that the Pre-Appeal Brief Review, dated December 7, 2007, *erroneously indicated* that claims 1, 2, 7-11, 13, 14 and 22-24 were being reviewed during the Pre-Appeal Brief conference.

1. Claims 8-11 and 14 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,587,824 ("Everhart"), and further in view of U.S. Patent No. 6,185,535 ("Hedin");

2. Claim 13 is rejected under 35 U.S.C. §103(a) as being unpatentable over Everhart in

view of Hedin, as applied to claim 8, and further in view of U.S. Patent No. 6,161,090

("Kenevsky").

Claims 8-11, 13 and 14 are being appealed.

IV. STATUS OF AMENDMENTS:

An Amendment Under 37 C.F.R. §1.111 was filed February 20, 2007, and entered by

the Examiner. The Claims Appendix reflects claims 8-11, 13 and 14 as listed in the February

20, 2007 submittal.

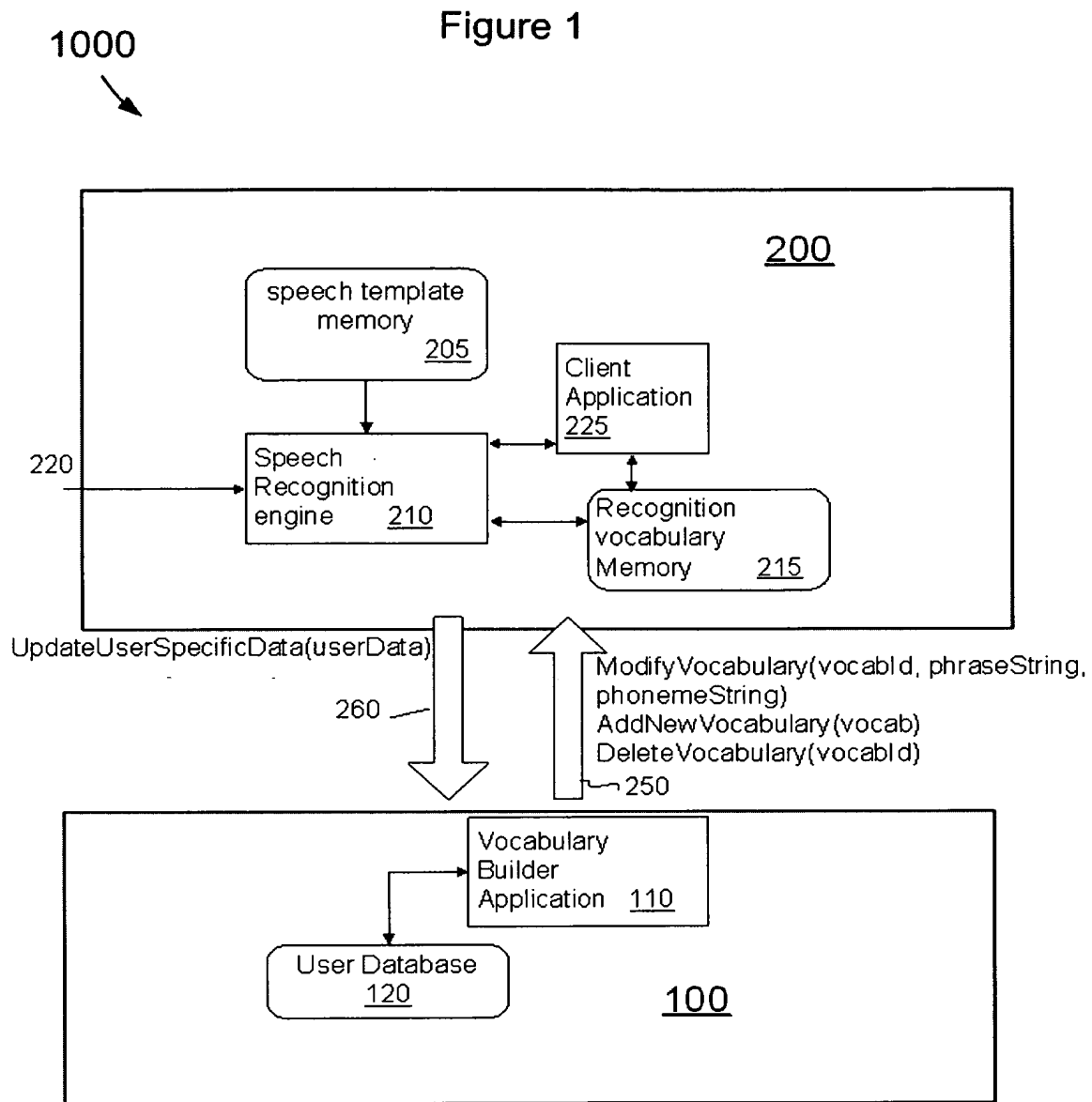## V. SUMMARY OF CLAIMED SUBJECT MATTER:

The following explains the subject matter set forth in each claim argued on appeal by

way of example embodiments in the specification by page and line number, and in the

drawings, if any, by reference characters only to satisfy 37 C.F.R. §41.37(c)(1)(v). This

concise explanation relies on example embodiments from the specification to describe the

claims; however, the claims recite subject matter not limited to these example embodiments.

Independent claim 8 is argued on appeal and discussed below.

Independent Claim 8

Example embodiments of the present invention are related to a speech recognition system including a client device in communication with a server. The embodiments provide for the client device to receive an input speech utterance and compare the utterance against an active vocabulary that can be dynamically modified if the client device recognizes the utterance. If the client device does not recognize the utterance, the client device allows the user to create a replacement command word that becomes a part of the active vocabulary.

Claim 8 recites "A speech recognition system". This system is described on Page 8, Line 3 to Page 9, Line 23 of the originally filed application, and is shown in FIG. 1 (see below).

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Figure 1

1000

200

speech template memory **205**

Client Application **225**

Speech Recognition engine **210**

Recognition vocabulary Memory **215**

220

UpdateUserSpecificData(userData)

260

ModifyVocabulary(vocabId, phraseString, phonemeString)
AddNewVocabulary(vocab)
DeleteVocabulary(vocabId)
250

Vocabulary Builder Application **110**

User Database **120**

100

Claim 8 further recites "a client device receiving an utterance from a user". As described on Page 9, Line 27 to Page 10, Line 2, FIG. 1 shows input speech 220 coming into client device 200.
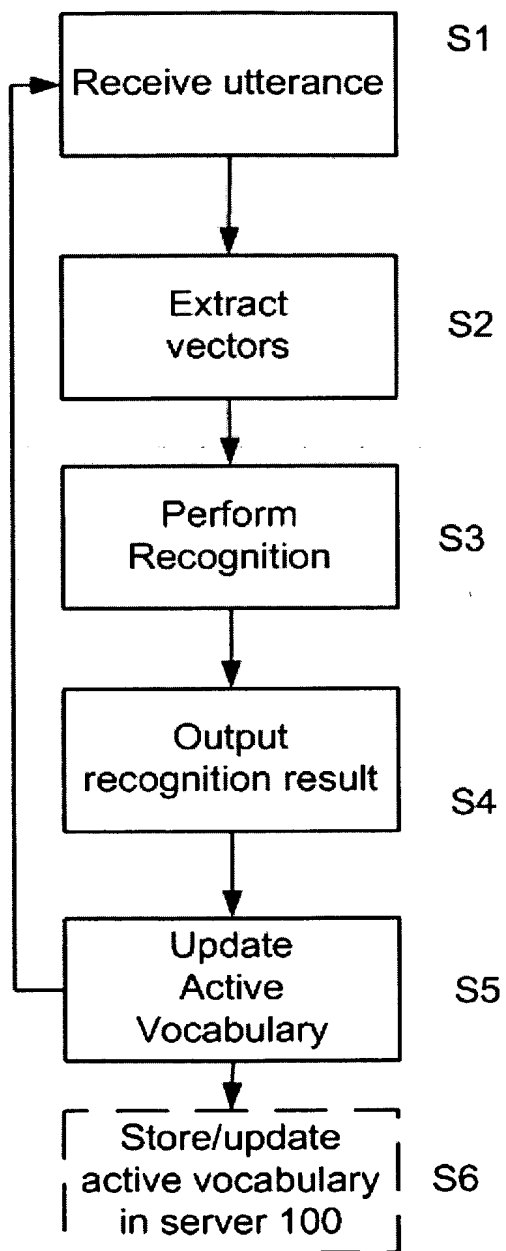
Claim 8 further recites,

> a server in communication with the client device, the client device comparing the received utterance to a stored recognition vocabulary representing a currently active vocabulary,

recognizing the received utterance and dynamically modifying the stored recognition vocabulary to improve recognition accuracy for subsequent received utterances, wherein the client device enables the user to create a replacement command word that is stored in the stored recognition vocabulary as a replacement command word corresponding to the received utterance, where the user's utterance was not recognized by the client device.

As described on at least Page 8, Lines 3-16, FIG.1 shows server 100 in communication with client device 200. Client device 200 compares the utterance 220 to recognition vocabulary stored in memory 215, as described on Page 10, lines 3-14 and depicted as Step S3 of FIG. 2 (see FIG. 2, below). As described on Page 10, Lines 15-29 and shown in FIGS. 1 and 2, if the client device 200 recognizes the received utterance 220 in step S4, then the client device 200 modifies and stores the vocabulary 215 in steps S5 and S6. As described on Page 10, Lines 15-29 and shown in FIGS. 1 and 2, if utterance 220 is not recognized by client device 200 is step S4, a replacement command word is stored in the vocabulary memory 215 as shown in steps S5 and S6.

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Figure 2

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        ┌─────────────────────┐
        │  Receive utterance  │   S1
        └─────────────────────┘
                  │
                  ▼
        ┌─────────────────────┐
        │       Extract       │   S2
        │       vectors       │
        └─────────────────────┘
                  │
                  ▼
        ┌─────────────────────┐
        │      Perform        │   S3
        │    Recognition      │
        └─────────────────────┘
                  │
                  ▼
        ┌─────────────────────┐
        │      Output         │
        │ recognition result  │   S4
        └─────────────────────┘
                  │
                  ▼
        ┌─────────────────────┐
        │      Update         │
        │      Active         │   S5
        │    Vocabulary       │
        └─────────────────────┘
                  │
                  ▼
        ┌ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┐
        │   Store/update      │
        │ active vocabulary   │   S6
        │   in server 100     │
        └ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┘
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VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Rejection of claims 8-11 and 14 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,587,824 ("Everhart"), and further in view of U.S. Patent No. 6,185,535 ("Hedin").

Rejection of claim 13 under 35 U.S.C. §103(a) as being unpatentable over Everhart in view of Hedin, as applied to claim 8, and further in view of U.S. Patent No. 6,161,090 ("Kenevsky").

VII. ARGUMENT

Claims 8-11 and 13-14 rise and fall together.

A. Claims 8-11 and 14 are not rendered obvious under 35 U.S.C. §103(a) as being unpatentable over Everhart in view of Hedin.

1) Independent claim 8, and Dependent claims 9-11 and 14

The Examiner rejects claims 8-11 and 14 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,587,824 ("Everhart"), and further in view of U.S. Patent No. 6,185,535 ("Hedin").

With regard to independent claim 8, the Examiner asserts that Everhart discloses a "client device" that teaches all of the claim limitations with the exception that Everhart fails to "disclose a server in communication with the client device".[1] The Examiner cites element 76 of Everhart's FIG. 6 in making this assertion. The Examiner asserts that Hedin teaches a

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[1] See Page 3 of the May 16, 2007 Office Action.

server in communication with the client device.[2] The Examiner cites FIGS. 1A-1B and 3 of

Hedin in making this assertion. The Examiner asserts that it would have been obvious:

> to modify Everhart et al. by incorporating the teaching of
> Hedin et al. in order to improve speech recognition efficiency
> by providing a more powerful speech recognizer at the server
> to recognize words/commands that speech recognizer of the
> client device is not capable of recognizing.[3]

Appellant asserts that the Examiner has used impermissible hindsight reconstruction

in combining features of Everhart and Hedin, and Appellant asserts that the references are not

properly combinable as Everhart teaches away from the Examiner's suggested combination.

Appellant asserts that the Examiner's combination of Everhart in view of Hedin is not

proper, as Everhart teaches away from the combination as suggested by the Examiner.

Appellant reminds the Examiner that if one reference does in fact teach away from the other

reference in a §103 rejection, then this finding alone can defeat an obviousness claim.[4]

Furthermore, Appellant submits that there is no suggestion to combine references, if a

reference teaches away from its combination with another reference.[5]

Appellant submits that Everhart teaches an in-vehicle method of improving speech

recognition for simple functions in an automobile. Specifically, Everhart allows a user to

speak a command, and then the system provides a user with an "N-best" command list (the

best matches, the system can create based on the user's spoken command). The system

requires the user to select which of the "N-best" commands the user actually intended,

thereby allowing the system to adapt to the user's voice, over time. As taught in Everhart, the

Everhart system fills the need for a "simple and effective technique for adapting an in-vehicle

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[2] *Id.*
[3] See Pages 3 and 4 of the May 16, 2007 Office Action.
[4] *Winner International Royalty company v Wang*, 202 F.3d 1340, 1349-50 (Fed Cir. 2000).
[5] *Tec Air, Inc v Denso Manufacturing Michigan Inc.*, 192 F.3d 1353, 1360 (Fed. Cir. 1999).

speech recognition system to correct incorrectly recognized voice commands"[6] by allowing spoken commands pertaining power devices such as climate control, a clock, interior / exterior lights, audio system, mirrors etc.[7] to respond to a user without the need for lengthy and iterative training commands[8] that would otherwise distract a driver. Appellant asserts that the Everhart patent is limited to "in-vehicle" speech recognition designed to recognize a small number of commands pertaining to a limited number of power devices to be controlled within the cabin of an automobile.

Appellant submits that Hedin teaches a low power automatic speech recognition system (ASR) provided in a local terminal, such as a personal computer (PC), which allows for unrecognized audio input to be forwarded to a remote server using a more powerful ASR. Hedin's terminal is able to recognize a small number of isolated words (about 50),[9] whereas the server is a separate, preferably remote processor, that is faster and has more storage space[10] than the terminal. Hedin's server is capable of recognizing a larger vocabulary of words supplied in continuous speech.[11] The Examiner asserts that it would have been obvious for a skilled artisan to modify Everhart's limited in-vehicle voice adaptation system to include Hedin's server, "in order to improve speech recognition efficiency by providing a more powerful speech recognizer at the server to recognize words/commands that speech recognizer of the client device is not capable of recognizing".[12] Appellant asserts that modifying the system of Everhart to provide a server-to-client relationship would unduly stretch the teachings disclosed and suggested, therein ignoring the greater context of Everhart's limited in-vehicle disclosure. Everhart teaches that incorporation of a more

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[6] See Column 2, Lines 23-25 of Everhart.
[7] See Column 4, Lines 43-47 of Everhart.
[8] See Column 3, Lines 44-47 of Everhart.
[9] See Column 4, Line 66 to Column 5, Line 3 of Hedin.
[10] See Column 4, Lines 48-50 of Hedin.
[11] See Column 5, Lines 1-3 of Hedin.
[12] See Page 3 of the May 16, 2007 Office Action.

powerful speech recognition system, such as Hedin's remote server, is impractical and would cause several undesirable effects for in-vehicle use. Specifically, in the Background section, Everhart discusses how conventional, "more sophisticated, context specific language models also exist"[13] with more powerful speech adaptation systems adapted to the speaker's phonetic characteristics by performing training routines.[14] Everhart explains that these more powerful systems are "inconvenient and time consuming".[15] Appellant additionally asserts that modifying Everhart to include a remote server, such as the one emphasized in Hedin, would create an undesirable lag-time that would lengthen the response time Everhart desires in order to respond to immediate command requests by a user inside the confines of an automobile. As stated in Everhart, "there is a need for a simple and effective technique for adapting an in-vehicle speech recognition system to correct incorrectly recognized voice commands".[16] Appellant asserts that Everhart's teaching of a simple speech recognition system able to quickly respond to user commands involving simple commands occurring within the confines of the cabin of an automobile *teaches away* from the addition of Hedin's more powerful server which would unnecessarily complicate Everhart's system while adding lag-time in opposition to Everhart's stated objectives.

Additionally, the purpose of the *speech adaptation system* of Everhart is to *avoid employing a more powerful speech recognition system*, by allowing a user to customize in-vehicle commands to his particular speech characteristics, i.e., his individual voice. In contrast, Hedin does *not provide speech adaptation*, but simply provides a remote server with an extensive vocabulary and more elaborate speech recognition algorithms to alleviate the very problem Everhart addresses, i.e., continually misinterpreting words. The teachings of

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[13] See Column 1, Lines 61-63 of Everhart.
[14] See Column 1, Lines 64-67 of Everhart.
[15] See Column 2, Lines 13-14 of Everhart.
[16] See Column 2, Lines 23-25 of Everhart.

Hedin add more complexity to the algorithms, whereas Everhart works around a lack of complexity by allowing *the user* (and *not the extensive algorithms*) to make corrections directly. Thus, Everhart further *teaches away* from adding more complex computer processing by more effectively allowing the user do it himself. Because Everhart explicitly teaches away from Hedin's more powerful server, Appellant asserts that the combination of Everhart in view of Hedin is improper, for purposes of a §103 rejection.

In the Examiner's Response to Arguments in the Final Office Action, the Examiner has indicated that Everhart is relied upon only for the teaching of speech recognition adaptation, *the speech recognition essentially being divorced from the "in-vehicle application"*.[17] The Examiner states, "If one combines the teaching of speech recognition adaptation *(and leave the in-vehicle applications alone)* with the client-server system of Hedin, one would obtain the claimed invention".[18] Appellant would like to remind the Examiner that the Federal Circuit has found that an Examiner "cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention" in a §103 rejection.[19] Appellant asserts that by essentially ignoring the "in-vehicle" aspects of Everhart, the Examiner is requesting that we remove the heart of Everhart's primary objective, thereby viewing Everhart's speech recognition system out-of-context. Appellant asserts that such hindsight reconstruction is improper, in combining §103 references.

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[17] See Page 2 of the May 16, 2007 Office Action.
[18] *Id.*
[19] *In re Fine*, 837 F.2d 1071, 1075 (Fed. Cir. 1988).

B. Claim 13 is not rendered obvious under 35 U.S.C. §103(a) as being unpatentable over Everhart in view of Hedin, as applied to claim 8, and further in view of Kenevsky.

2) Dependent claim 13

The Examiner rejects claim 13 is rejected under 35 U.S.C. §103(a) as being unpatentable over Everhart in view of Hedin, as applied to claim 8, and further in view of U.S. Patent No. 6,161,090 ("Kenevsky").

The Examiner relies upon Kenevsky to teach a server further including a database storing client-specific data that is updated by the client database.[20] Appellant asserts that even a cursory review of Kenevsky shows that Kenevsky does not make up for the deficiencies of Everhart and Hedin, for at least the reasons stated above related to independent claim 8. Therefore, Appellant believes that claim 8 is patentable over Everhart in view of Hedin, and further in view of Kenevsky.

For at least the reasons stated above related to independent claim 8, Appellant believes dependent claim 13 is patentable.

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[20] See Page 5 of the May 16, 2007 Office Action.

VIII. CONCLUSION

Appellant respectfully requests the Board to reverse the Examiner's rejection of claims 8-11, 13 and 14 and allow each of these claims.
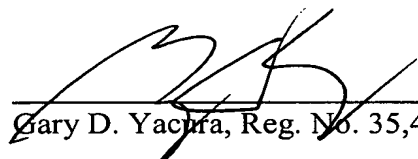
Pursuant to 37 C.F.R. § 1.17 and § 1.136(a), Appellant respectfully petitions for a one (1) month extension of time for filing a response in connection with the present application, and the required fee of $120.00 is attached.

The Commissioner is authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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IX.   CLAIMS APPENDIX:

8.   A speech recognition system, comprising:

a client device receiving an utterance from a user; and

a server in communication with the client device, the client device comparing the received utterance to a stored recognition vocabulary representing a currently active vocabulary, recognizing the received utterance and dynamically modifying the stored recognition vocabulary to improve recognition accuracy for subsequent received utterances, wherein the client device enables the user to create a replacement command word that is stored in the stored recognition vocabulary as a replacement command word corresponding to the received utterance, where the user's utterance was not recognized by the client device.

9.   The system of claim 8, wherein the dynamic modifying of the stored recognition vocabulary is dependent on a current state of user interaction in a voice dialog of the user that includes the utterance and on a recognition result from the comparison.

10.   The system of claim 8, the client device further including an application configured to dynamically modify the stored recognition vocabulary.

11.   The system of claim 8, the server further including a vocabulary builder application configured to dynamically modify the stored recognition vocabulary by sending data to the client application.

13.   The system of claim 8, the server further including a database storing client-specific data that is updatable by the client device.

14.   The system of claim 8, the client device further including a processor for comparing a speech template representing said received utterance to said stored recognition vocabulary to obtain a recognition result, wherein the processor controls the client application to modify the stored recognition vocabulary.

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X.   EVIDENCE APPENDIX:

As no evidence was submitted and relied upon in this Appeal, this Appendix contains

no evidence pursuant to 37 C.F.R. §41.37(c)(1)(ix).

XI.   <u>RELATED PROCEEDINGS APPENDIX:</u>

As there are no Related Proceedings associated with this Appeal, no additional information is being supplied in an Appendix pursuant to 41.37(c)(1)(x).